REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Official Action of September 22, 2005, relating to the above-identified application.

The foregoing Amendment is presented in order to more particularly point out and distinctly claim Applicants' contribution to the art. Claims 1 and 10 have been amended to point out the amount of ionically counterbalanced diluent which is added is in an amount sufficient to achieve an ionic balance with respect to the acrylamide polymer.

The claims in the application are Claims 1 through 22.

The rejection of Claims 1 to 22 under 35 U.S.C. §103(a) in view of the combined teachings of *Chamberlain*, U.S. Patent 5,529,975, *Brigance, et al.*, U.S. Patent 6,423,109 and *Rose, et al.*, U.S. Patent 6,288,010 is traversed and reconsideration is respectfully requested.

The present invention relates to the field of agricultural chemicals and the compounding of those chemicals to include such items as fertilizers, herbicides and pesticides as well as other auxiliary agents which enhance the capability of the agrochemicals to adequately deposit and cover the intended crop surface or soil in the appropriate areas. Typically the farmer or other applicator mixes the agricultural chemicals and all of the auxiliary agents with water which is then applied from a spraying tank by means of a spraying apparatus to a target area.

Compatibility problems and solubility problems arise as a result of problems of wetting and low solubility of many products that are used in the agricultural area.

Dry fertilizers and dry adjuvants have the advantage of containing a high concentration of active ingredients but have the disadvantage in that they are frequently difficult to dissolve and require substantial handling.

Because of variation in water quality, temperatures, hardness, acidity or alkalinity as well as mineral content, all those factors effect the ability to quickly dissolve fertilizer compositions into aqueous systems to form a solution ready to spray to the target area. Lack of solubility of the sprayable composition results in plugging conveying lines and spray nozzles and creates difficulties and problems for the farmer.

The problem becomes particularly acute when it is desired to combine two or more agricultural chemicals. Because of different solubility rates and compatibility characteristics, a combination agricultural chemical formed of two or more active ingredients can further complicate the problems in forming a good sprayable composition that can be readily dissolved and sprayed without problems.

Another problem with agricultural chemicals is that the concentrate formulations containing fertilizers and the adjuvants that are typically used with fertilizer compositions have a tendency to precipitate or settle out from the composition because of instability of the mixture and phase separation. Thus, one of the aims of the present invention is to provide compositions that are in stable form, usually soluble and clear and which remain so for an extended period of time. A properly balanced formula is one that will not precipitate out or form a gel which is not sprayable.

Applicants have explained beginning on page 8 that the polymers of acrylamide as well as other polymers have been used widely in agricultural chemical formulations. However, even though such polymers give very good spray drift control, they tend to form viscous aqueous solutions or have other compatibility or solubility problems which creates inefficient dissolution of the polymer.

Applicants have found that the compatibility problems and solubility problems can be avoided or minimized by using an ionically counterbalanced diluent in combination with the acrylamide polymer in need of proper ionic balancing to achieve a properly ionically balanced composition for applying to soil or plants.

None of the references cited in the Official Action teach or suggest how one would overcome the many problems that exist in the agricultural chemical field in order to improve compatibility and solubility and avoid some of the problems that have occurred in the past with other formulations.

Thus, none of the references teach that when dealing with an acrylamide polymer in need of proper ionic balancing that the use of an ionically counter balanced diluent in an amount sufficient to achieve an ionic balance with respect to the acrylamide polymer would bring about a successful ionically balanced composition for application to the soil or plants.

The *Chamberlain* patent, U.S. 5,529,975 is representative of the prior art that is already acknowledged by applicant in the present application. That is, the reference shows polyacrylamides used in forming agricultural concentrates that are capable of spraying. Although the patent mentions that such concentrates can be diluted to form a sprayable aqueous

composition (col. 3, lines 43-49), there is nothing disclosed in the reference which would teach a person skilled in the art how to overcome compatibility and solubility problems in the event that such problems arise in the formulation of sprayable compositions containing the agricultural chemicals.

Chamberlain does not mention any incompatibility or solubility problems. Consequently, Applicants respectfully submit that there is nothing in *Chamberlain* which discloses or suggests proper ionic balancing when formulating agricultural chemical compositions containing an acrylamide. Thus, *Chamberlain* is concerned only with those formulations which have already been established as being successful and do not create any problems whereas applicant seeks to provide a way to enable the use of formulations which have experienced difficulties in application, solubility and compatibility by using acrylamide polymers which do not necessarily readily dissolve or are not completely compatible and hence are in need of a proper ionic balancing in order to achieve a suitable sprayable formulation.

Note that *Chamberlain* teaches that the systemic activity of systemic active ingredients in an agricultural spray formulation is improved by incorporating the water soluble polyacrylamide in the sprayable composition. The reference teaches that the polymer that is used has a sufficiently low molecular weight that its presence does not substantially effect the properties of the composition. Furthermore, the teaching of the reference is that the resin should have a low solution viscosity so that it can be formed into an aqueous solution with the active ingredient.

Thus, *Chamberlain* seeks to prevent any compatibility or solubility problems by modifying the properties of the polymer; that is, by either selecting a low molecular weight or a

low solution viscosity. It does not teach what to do when confronted with a polymer which does not have those characteristics.

Applicants' invention, in contrast, enables the use of polymers which have compatibility and solubility problems, i.e., are in need of proper ionic balancing, by selecting an ionically counter balanced diluent in an amount sufficient to achieve an ionic balance with respect to the polymer. Applicants' invention relies on an additive, namely the ionically counter balanced diluent to modify the properties of the acrylamide polymer rather than the solution proposed by *Chamberlain* which is to change the type of polymer that is used, that is, one of low molecular weight or low solution viscosity. Hence it is clear that the approach taken by applicants and the approach taken by *Chamberlain* to achieve a suitable sprayable agricultural composition are not the same and one would not suggest the other to a person having ordinary skill in the art.

Brigance, et al., Applicants' earlier issued patent relates to free flowing fertilizer compositions containing a nitrogen fertilizer and a combination of a polyacrylamide emulsion or dispersion as well polyacrylamide powder with a particular size range. There is nothing in this reference which would teach or suggest to a person ordinarily skilled in the art how to overcome compatibility and solubility problems with acrylamide polymers in agricultural chemical formulations. More particularly, there is no suggestion that there needs to be an ionic balance between the acrylamide polymer and the remainder of the components whether it be water or an agricultural chemical. Hence, a person skilled in the art would not be led to the solution provided by the present invention namely, which is to provide an ionic balance to an acrylamide polymer in need of ionic balancing when introduced into an agricultural formulation.

Hence, Applicants' earlier issued patent neither teaches nor suggests the solution provided by applicants in the instant application.

The patent of *Rose, et al.*, U.S. 6,288,010 discloses agricultural formulations and emphasizes providing anti-drift agents in the form of a water soluble anionic polymer.

In col. 2, beginning in line 5, *Rose, et al.* points out that acrylic polymers have been used in the past as anti-drift agents and that they are preferably non-ionic although they can contain relatively low amounts of an ionic polymer. Nevertheless, *Rose* does not teach how to balance polymers with charged pesticide systems. A neutral pH which is recommended by *Rose* is not necessarily the optimum for many of the important herbicides on the market today. For solubility of the concentrate, the pH may be a significant factor although essentially non-ionic polymers which are compatible with tank mixes have dramatically varying solubility in electrolyte concentrations that are dependent on pH. Many formulations are soluble only in a very narrowly defined range of pH.

Ingredients that may be added to a typical agricultural spray tank formulation impact the overall solubility or disbursibility of the contents of the spray tank. Furthermore, compatibility of the finished concentrated product needs to be balanced for adequate solubility. For example, a non-ionic polymer is not soluble in a 20% AMS solution. An anionic polymer of a charge density of 30% or more is soluble in up to 34% of AMS solutions. However, a highly anionic charged polymer which is soluble in 34% AMS may not be compatible with a cationic surfactant system such as exists with Round Up Weather Max or Round Up Original Max. Mixing either of the Round Up formulas in a spray tank using the above mixture of AMS and the

polyacrylamide would result in a spray tank that is not sprayable due to massive gel formation. On the other hand, Applicants' invention permits the finding of the correct balance of solubility in an AMS solution and compatibility in the spray tank with the typical herbicide formulation such as Round Up, in order to provide a commercially viable product. For example, a 30% anionic charged polyacrylamide such as Magnafloc No. 156 is soluble in 34% AMS concentrate and compatible with Round Up formulations in the spray tank. By comparison, a 40% anionic charged polyacrylamide while compatible with AMS concentrate forms gel globs in the spray tank with Round Up Weather Max.

Thus, it can be seen that simply because the acrylamide polymer is indicated as being non-ionic does not necessarily mean that it is a balanced composition from the standpoint of ionic balancing. The concept of ionically balancing compositions is totally absent from the three references relied on in the Official Action. Accordingly, applicants respectfully submit that the references do not establish *prima facie* obviousness of the present invention.

For reasons set forth above, applicants respectfully request reconsideration and favorable action at the Examiner's earliest convenience.

Respectfully submitted,

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